Team Research in Social Science
Major Consequences of a Growing Trend

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In recent years there has been a marked increase in research conducted by teams of scientists coming from two or more different fields.

To understand the potentialities and the difficulties of this new research pattern, the National Institute of Mental Health sponsored a series of conferences[1] under the direction of the National Training Laboratories. They were held during 1951 and 1952 in conjunction with the annual meetings of five professional societies: the American Anthropological Association, the American Orthopsychiatric Association, the American Psychiatric Association, the American Psychological Association, and the American Sociological Society. At these conferences, some of today's leading social and medical scientists, drawing from their experience, studied the values and limitations of this type of research, pitfalls likely to be encountered, and effective ways of avoiding or overcoming them.

Ten projects were included in conference agenda and studied in some detail. These were highly diverse in size and composition of team, nature of the research problem, locale and characteristics of the research setting, and other important factors. The material presented from these cases is supplemented by the present and past research experience of all participants in the conferences. Among the projects represented were studies of child personality and development; the sociology of mental health and disorders, including family, community, and cultural studies; group dynamics; studies of treatment methods; research into specific kinds of mental disorder; and neurophysiological, biochemical, and endocrinological research. More than one hundred highly diverse projects formed the background of the conferences. Most of the material is applicable to a wide range of research projects in which persons with different professional backgrounds collaborate.

From this wealth of material, several important consequences of the growing trend toward team research are apparent. Three will be considered here.

Influence Over the Direction of Research

Influence exerted through methods of research financing.

Perhaps the most serious consequence of the growing trend toward team research is the influence exerted over the direction of research through the methods of research financing. Team research requires more money than individual research.

Many scientists feel that when an investigator begins the search for funds, he gives up some of his freedom. The man with the money is an important factor in the formulation of the research problem and in how the research is carried out.

The first hurdle is to find a potential sponsor and submit an application for funds in such a form that it will be approved. Much time and effort are often required to obtain research funds. Some participants reported that they spent 25% or more of their working time in discussing contemplated research and how it might be supported, and in writing project proposals.

Even when an application is approved, problems often arise because of the length of time it was pending. If, for example, the research involves field work which can be carried out only during the summer, a month's delay in approval may result in the loss of a year for the research. Such delays may mean, too, that personnel with tentative commitments may be lost to the project, and that various provisional arrangements have to be worked out all over again because of the lapse of time.

Furthermore, grants are often given for too short a period. The need for frequent reapplication for support is an important source of tension, frustration, and actual waste. As long as sponsors operate largely on the basis of short-term grants, much research will not be done. Many sponsors are keenly aware of this problem and more long-term grants are being made.

Then there is the problem of the specificity required in the application for funds and the degree of modification permitted of initial plans. The common pattern of contract and ex-

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change of goods is at variance with the pattern of research, which requires both money and freedom and promises nothing specific in the way of delivery of goods. Particularly in interdisciplinary research, if the potentialities of the collaborative effort are to be realized, a completely charted course at the beginning of the research program seems to produce stress and limit the effectiveness of the research.

The requirement of periodic reports is another aspect of sponsor-research relationships which sometimes causes difficulty. Participants emphasized the point that sponsors should not require reports too soon nor expect results having immediate value. It is wasteful of research time to expect the researcher to give a detailed report at too frequent or at inopportune intervals. Reports require stock-taking, and, at times, a reevaluation of the research program. They can be a valuable stimulant, but to serve this purpose their timing must be appropriate to the particular study.

It must be recognized that some of these criticisms were based on lack of sufficient understanding of the sponsor's point of view and what he actually expected. For example, the question was asked:

> How can research be described to a potential sponsor so that it looks as if it is going some definite place when you don't know where it is going? My impression of application forms is that they require so much information that you must know almost everything you plan to learn before you start the research.

Others noted that foundations were not so rigid as this comment implied. One person reported:

> I have had experience with four foundations on different studies over a period of years, and in each case something like this has happened. You write out a statement of what you are after, what your ideas are, and what you hope to find. On the basis of this, they let you have the money. Then you come out with something entirely different and they are perfectly happy. They know that research is going to produce something different from what it starts out to produce, and as long as they have the assurance that you have the ideas and the methods to do the work, they are not worried about shifts or clarifications or new ideas.

No examples were cited of a grantor who had objected to a shift when something significant had come from the research.

The sponsor's criteria for judging projects can influence the development of a field of knowledge. It was thought desirable for researchers and representatives of fund-granting agencies to collaborate in developing explicit criteria for project evaluation. If persons representing these two components of research endeavor have different orders of priority for particular kinds of research, the difficulties of their working together are greatly increased.

There may, however, be dangers in this approach. Established criteria may, in effect, set up a priority list which would discourage research in new areas. They might also result in the support of poor-quality projects in high-priority areas and the failure to support high-quality projects in less favored areas. Furthermore, this approach makes the questionable assumption that the significance of research results can be predicted in advance.

Influence resulting from the greater visibility of team research.

Because of the size and complexity of many research projects, team research is subject to more publicity than is the work of the individual investigator. Its launching may even be accompanied by a certain amount of fanfare, and its elaborate start may create the expectation of quick return.

These pressures of publicity are frequently internalized by the individual member so that he feels an obligation to the group to do the job more quickly than if he were working alone. In addition to pushing himself, he pushes his collaborators to supply him with their results in order to further the conclusion of his own part of the research. Such a situation often leads to a sense of undue urgency to produce.[2]

Increased Size of Project Staffs

Effect of size on personnel selection.

The second consequence of the changing research patterns is the increased size of project staffs. In team research the personality and personal characteristics of the researcher are of greater importance than in individual research. Some persons can work comfortably and effectively in a group situation; others cannot. Irreparable damage may be done to a good research worker by making him a member of a team when he is not suited to that kind of research situation. The frustration in team research from material, financial, scientific, and emotional problems is usually higher than in individual research. Team members must be able to tolerate this and be flexible in their adjustment to unexpected circumstances and unaccustomed work methods. Personal and professional security, emotional maturity, openmindedness, and humility are other important characteristics. It is necessary also to have an honest respect for people in other professions and disciplines, a high degree of tolerance for the concepts and theories of others, a healthy curiosity and desire to learn, and a recognition of one's own strengths and limitations. Some persons cannot work as members of a team because they become so dependent on the group that they lose their originality and creativity.

An important and desirable characteristic suggested by participants is the kind of mental approach which can see and integrate the relationships among many different factors. Good team workers are also those who can shift from a high level of abstraction to the concrete level, and who can operate at an intermediate level broad enough to make theoretical advances, but specific enough to have a clear relationship with what is done experimentally or observed practically. It was suggested that persons with expansive personalities tend to go into team and interdisciplinary research, while obsessive-compulsive persons may have difficulty in becoming interested in that kind of research.

The interests and motivations of researchers are of primary

2. William Caudill and Bertram H. Roberts, both of whom participated in the conferences reported here, discuss this and other problems in their article, "Pitfalls in the Organization of Interdisciplinary Research," *Human Organization, 10,* 4 (Winter, 1951).

importance in determining whether they can work effectively on a group subject. Participants must believe in the project and have a real stake in the solution of the problem. A community of interests provides a strong foundation for the development of an effective team. In addition to motivation in terms of scientific goals, there must also be motivation in terms of individual, personal goals, which vary according to the institutional and personal commitments of participants. Difficulties may arise unless personal goals are compatible with scientific aims of the research program.

The nature of many research positions makes securing and holding good people particularly difficult. Such matters as promotion, job security, and continuity of personnel are often acute because many research positions are established in connection with a specific project and are not part of the on-going job structure of the organization. They are jobs which lead nowhere, except perhaps from research assistant to research associate, if the project lasts long enough. All a person can look forward to is the end of the project. This sort of blind alley creates a difficult problem in morale. It was suggested that applications for research grants include provision for some promotion after a certain period so that there is a financial incentive for staying with the project.

If lack of advancement, *per se,* does not cause loss of the best qualified persons, the approaching end of the project or fear that the grant will not be renewed is apt to cause staff members to leave prematurely. In many projects, for example, staff members are recruited on the basis of a one-year grant. During the latter part of the year, before it is known whether the grant will be renewed, efficiency begins to drop because members are concerned about their future and are looking for other jobs. In some instances, the institution with which a project is connected has met this difficulty by assuming responsibility for the continued employment of project personnel.

The question of length of grants goes beyond that of morale and the completion of a particular project. It often takes a year or more for an interdisciplinary team to reach fully efficient functioning. Research resources are wasted when a group which has attained a high level of effectiveness disbands at the end of a single project.

The effect of size on the individual researcher.

Size of the project staff has a bearing on the effectiveness of the individual staff member. Fantasy is an important part of the scientific process. If one works alone he is left to his own fantasy. In the group there is an intrusion into one's fantasy; a colleague may interrupt and start the researcher off in a different direction. Some groups have an inhibitory effect; in others, everyone's sensitivity is increased.

Some participants felt that real originality is rare in a collaborative group where persons of equal status sit down and try to develop a unified original concept. One person said:

> I have a feeling that imaginative research has a lot of similarity to artistic creation. I don't know of a case where a group of people have written a symphony or a great work of literature, and I'm not sure I know of a case where a group of people of equal status have made a great scientific contribution.

In answer to this, it was suggested that perhaps the culture of scientific behavior is changing. In the past, science and art have usually attracted persons who functioned best alone. Those whose fantasies are stimulated by groups did not go into science because it presented no opportunity for group work. Even for those who do work best alone, however, we must not underestimate the importance of having a few persons with whom one can talk freely. Even the highly creative person may not be able to go on for long periods without such interaction. But consultation rather than collaboration may meet such needs.

Can a group formulate a research problem?

On this question, there were marked differences of opinion. A really effective collaboration can provide for a greater range and more effective use of appropriate research methods than could be achieved individually. Such collaboration can also bring forward important questions that might have been overlooked by the lone researcher. On the other hand, group problem-formulation can lead to a mere compromise out of which no creative results can be expected.

What are the conditions under which a group can operate most effectively in formulating a research problem? Each member must have the opportunity to formulate his own contribution as he sees it. There must be some flexibility in the conduct of the project so that members can participate in reformulating their contributions as they learn to work together. Finally, the plan should allow for changes in team membership, so that an individual may drop out as he comes to feel that the research problem has been so defined that it is no longer of compelling interest to him.

Group problem formulation clearly calls for a high level of skill in group discussion. No doubt it also calls for effective leadership by a single individual. In fact, some have doubted whether more than one person could conceive an idea and initiate a project. They have suggested that where group formulation appears to take place, in reality the product comes primarily from the leadership of one individual. Even if that is the case, however, the value of the product may be increased through the stimulation he receives in group discussion.

Those who emphasized the value of individual creativity also felt that team work might be a refuge for those who were reluctant to do their own hard thinking.

The problem of supplying the right kind of leadership.

As the size of research staffs grows, the question of leadership becomes increasingly important. Difficulty is often experienced in achieving leadership which provides the necessary structure and direction and at the same time fosters creativity and develops the potentialities of group members.

In some research, authority is vested in a prima donna who has a kind of charismatic leadership position and whose will tends to dominate, formally or informally. The project becomes his. This solves the problem of formulating the aims of the project. It also solves—at least initially—the problem of recruiting team members and assigning research roles; only those willing to follow the leader join the project.

The discussants found serious dangers in this type of organization. If a generation of researchers were to grow up with experience only in partial assignments handed out by a project director, it would be difficult indeed to find the scientific creativity which grows best when men shoulder the responsibility for designing their own research.

The Shift of Research into New Settings

Team research is often conducted in settings where research is an innovation and where researchers must work with practitioners who have little understanding of research. While the researcher may be satisfied with a long-run goal, remote from practical application, the practitioner is likely to be looking for something tangible which will be of immediate benefit in his work. This suggests the need for designing "bifocal" studies with both a long-range goal and one that is stated in terms of short-run application. On the other hand, as administrators gain more familiarity with research, many of them are willing to think in long-run terms or in terms of developing a better understanding that will lead to more effective functioning, even when the research yields no specific action recommendations.

When research is conducted in the field, an interdisciplinary project may introduce some members to types of activity quite unfamiliar to them. The problem is illustrated in the recruitment of a psychiatrist for such a project. The sociologist in charge of the project said:

> I wanted someone who would be an actual working partner and not just window dressing. Moreover, I was concerned with more than his professional qualifications. Was he flexible enough to work with rural people and live under field conditions? Could he fix a tire? Would I have to be a valet to a person accustomed to the services of nurses and secretaries and the trappings of a comfortable office? I had a stereotype of a psychiatrist, and my stereotype was not the kind of a person who could live and work successfully under primitive conditions.

The importance of these non-professional qualifications was recognized by the psychiatrist on this project. He reported:

> I found myself working out in the fields to get information because it was summer and the people we were studying had to harvest their crops. They were not interested in our questions and examinations, and in order to contact them at all we had to go out in the fields. So I found myself shucking corn and doing many other things right along with them. It was a great experience for me, because I saw human beings in their natural environment functioning without awareness that I was even there.

Strengths and Weaknesses of Large Team Research

Like most innovations, the trend toward team research has both advantages and disadvantages.

As teams become larger, originality is apt to be stifled. Or, if that does not occur, then the opposite is likely to take place, and the ideas generated become too many and expansive to be handled.

Individual freedom is restricted through the coordination and organization necessary in group research. An individual working alone can follow a tangential lead easily, but if he is working in a group he cannot, for the whole group must agree to a change in goal.

Interpersonal difficulties are more likely on larger teams.

Team research is expensive. The error of a group may be no greater than the error of an individual researcher, but it costs more.

The larger the team, the more time is required in communication, time which might be spent more profitably on the research itself. Communication may also be more difficult. The necessity for communication can be beneficial, however, through the clarification which results.

As teams become larger, more time is needed for administration. The research director is often forced into an administrative role which he is not well qualified to fill and where his research abilities are wasted. Many persons have recognized the need for a research administrator on larger teams, but this is a job for which it is often difficult to obtain funds.

On the positive side, investigators can tackle larger problems in group research than they can individually. These problems can be handled more adequately, and the work is likely to result in a more powerful and effective research job.

Team research, particularly when it is interdisciplinary, gives a broader outlook, opens new horizons, and stimulates more people. Individual contacts and consultations can rarely accomplish the stimulating interaction experienced in an effectively functioning group.

Many of the pitfalls and problems of interdisciplinary and team research can be minimized or avoided by recognizing them in advance and guarding against them. Team work for the sake of team work obviously does not make good research sense, but many of the complex problems being studied today demand a team approach. When used appropriately, the values of team research far outweigh its disadvantages, and it should make increasing contributions to understanding and solving some of the important problems of today.